THE EADS MICROPACK PROJECT

A NOVEL, FLEXIBLE APPROACH TO PACKAGING INTEGRATED MICROSYSTEMS FOR SPACE APPLICATIONS

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ABSTRACT :

EADS recognises the potential for Microsystems Technology (MST) to disrupt and revolutionise the space industry, where it can dramatically reduce mass, size and power requirements and therefore mission cost. Therefore EADS is developing a novel modular approach to packaging integrated microsystems for space applications called 'micropacks'.

The micropack include suites of COTS MST sensors, packaged and integrated into a 3D modular multi-layer ceramic package. This introduces flexibility and means that this impressively light and compact micropack technology can be adapted to form the basis as a solution for a range of exciting future mission concepts such as:

- Highly integrated multi-functional nanosatellites (e.g. for Solar Terrestrial Physics or Space Weather monitoring)
- Planetary aerobots on Mars, Venus, the Giant Planets and Titan (e.g. as a payload/system package)
- Sub-100g planetary microprobes for measuring atmospheric profiles
- Solar sails (e.g. as the central hub of the spacecraft)
- Penetrators (e.g. as a payload/system package)
- Robotic planetary explorers (e.g. landers, rovers, walkers, hoppers)

The micropack consists of 5 ceramic layers, consisting an atmospheric sensor unit (e.g. pressure sensor), acceleration sensor unit, power supply unit, data handling unit (a Texas Instruments MSP430 micro controller), or a chipsize RF transceiver unit laminated into the ceramic (an interesting new approach). Each module has a standardized interface, which ultimately combines with other modules to form a system platform. The size of the micropack will be approximately a mere 20x25x25mm^3, with power consumption of less than 100mW and of mass just 25g.

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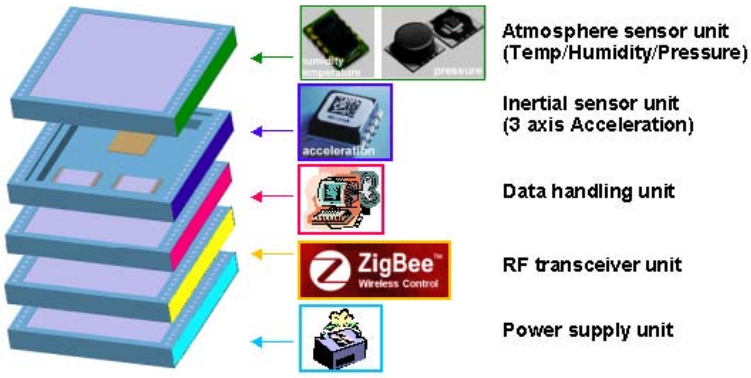

Fig 1. Micropack Concept

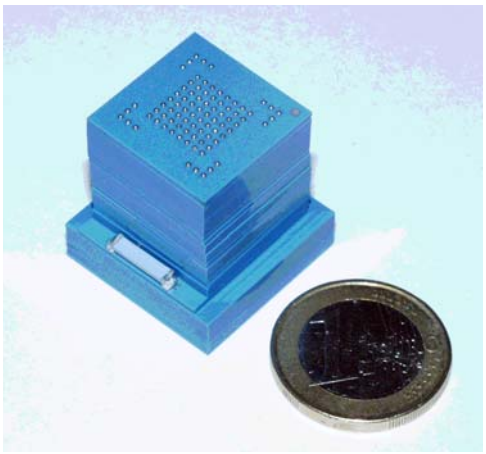

Fig 2. EADS Micropack 2005

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